AMENDMENTS TO THE SPECIFICATION

Please amend ¶ [0001] of the Specification as follows:

[0001] This application is related to the following ~~co-pending and commonly assigned~~ patent applications: 1) U.S. Patent Application Serial Number 10/306,279 filed November 27, 2002 entitled "SYSTEM AND METHOD FOR MEASUFUNG THE CAPACITY OF A STREAMING MEDIA SERVER," now U.S. Patent No. 7,424,528; 2) U.S. Patent Application Serial Number 10/601,956 filed June 23, 2003 entitled "SYSTEM AND METHOD FOR MODELING THE MEMORY STATE OF A STREAMING MEDIA SERVER," now U.S. Patent No. 7,310,681; and 3) U.S. Patent Application Serial Number 10/601,992 filed June 23, 2003 entitled "COST-AWARE ADMISSION CONTROL FOR STREAMING MEDIA SERVER," now U.S. Publication No. 2004/0260619, the disclosures of which are hereby incorporated herein by reference.

Please amend ¶ [0026] of the Specification as follows:

[0026] As described further below, server configuration information 103 may include benchmark information, such as the benchmark information described in U.S. Patent No. 7,424,528, ~~co-pending U.S. Patent Application Serial Number 10/306,279~~ filed November 27, 2002 entitled "SYSTE.M AND METHOD FOR MEASURING THE CAPACITY OF A STREAMING MEDIA SERVER." U.S. Patent No. 7,424,528 ~~Application Serial Number 10/306,279 entitled "SYSTEM AND METHOD FOR MEASURING THE CAPACITY OF A STREAMING MEDIA SERVER"~~ discloses a set of benchmarks for measuring the basic capacities of streaming media systems. The benchmarks allow one to derive the scaling rules of server capacity for delivering media files which are: *i*) encoded at different bit rates, and *ii*) streamed from memory versus disk. As U.S. Patent No. 7,424,528 ~~Application Serial Number 101206,279 entitled "SYSTEM AND METHOD FOR MEASURING THE CAPACITY OF A STREAMING MEDIA SERVER"~~ further describes, a "cost" function can be derived from the set of basic benchmark measurements. This cost function may provide a single value to reflect the combined resource requirement such as CPU, bandwidth, and memory to support a particular media stream depending on the stream bit rate and type of access (e.g., memory file access or disk file access).

Please amend ¶ [0034] of the Specification as follows:

[0034] In the example embodiment of FIGURE 2, capacity planner 101 has the ability to measure and to compare the capacities of different media server configurations. More specifically, in this example embodiment capacity planner 101 uses a cost function for evaluating the capacities of various different server configurations under the workload. As mentioned above, a technique for measuring server capacity using a cost function is disclosed in co-pending U.S. Patent No. 7,424,528 ~~Application Number 101306,279. entitled "SYSTEM AND METHOD FOR MEASURING THE CAPACITY OF A STREAMING MEDIA SERVER."~~ Also, a technique for measuring server capacity using a cost function is described by L. Cherkasova and L. Staley in "Building a Performance Model of Streaming Media Applications in Utility Data Center Environment", *Proc. of ACM/IEEE Conference on Cluster Computing and the Grid (CCGrid)*, May, 2003 (hereinafter referred to as "the L. Cherkasova Paper"), the disclosure of which is hereby incorporated herein by reference. The above references introduce a basic benchmark that can be used to establish the scaling rules for server capacity when multiple media streams are encoded at different bit rates. For instance, a basic benchmark may be executed for each of various different encoding bit rates for files stored at a media server.

Please amend ¶ [0037] of the Specification as follows:

[0037] As shown in the example of FIGURE 2, capacity planner 101 may have stored thereto (e.g., to a data storage device, such as random access memory (RAM), hard disk, optical disk drive, etc., which is communicatively accessible by capacity planner 101) serves configuration information 204, such as configuration information 103 in the example of FIGURE 1. In this example, server configuration information 204 includes benchmark information for various different server configurations, such as the benchmark information described in ~~co-pending~~ U.S. Patent No. 7,424,528. ~~Application Serial Number 10/306,279 entitled "SYSTEM AND METHOD FOR MEASURING THE CAPACITY OF A STREAMING MEDIA SERVER."~~ An objective of the basic benchmark according to one embodiment is to define how many concurrent streams of the same bit rate can be supported by the media server without degrading the quality of any streams.

Please amend ¶¶ [0039]-[0040] of the Specification as follows:

[0039] Thus, a *Single File Benchmark* (SFB) may be executed for each of various different encoding bit rates for files stored at a media server under evaluation. The SFB measures the media server capacity when all of the clients in the test are accessing the same file. That is, the result of the SFB for a particular encoding bit rate defines the maximum number of concurrent streams of a single file encoded at that particular bit rate that the media server can support. Example techniques for executing SFBs for a media server are described further in ~~co-pending~~ U.S. Patent No. 7,424,528. ~~Application Number 101306,279 entitled "SYSTEM AND METHOD FOR MEASURING THE CAPACITY OF A STREAMING MEDIA SERVER."~~ In this example embodiment of FIGURE 2, an SFB is determined for each of various different server configurations, and such SFB determined for each server configuration is included in the collection of benchmarks 204.

[0040] Similarly, a *Unique Files Benchmark* (UFB) may be executed for each of various different encoding bit rates for files stored at a media server under evaluation. The UFB measures the media server capacity when all of the clients in the test are accessing different files. That is, the result of a UFB for a particular encoding bit rate defines the maximum number of concurrent streams, each of different files that are encoded at the particular bit rate, that the media server can support. Example techniques for executing UFBs for a media server are described further in ~~co-pending~~ U.S. Patent No. 7,424,528. ~~Application Number 101306,279 entitled "SYSTEM AND METHOD FOR MEASURING THE CAPACITY OF A STREAMING MEDIA SERVER."~~ In an example embodiment of FIGURE 2, a UFB is determined for each of various different server configurations, and such UFB determined for each server configuration is included in the collection of benchmarks 204.

Please amend ¶ [0043] of the Specification as follows:

[0043] Capacity planner 101 uses the benchmarks for the various different server configurations to evaluate those server configurations under the received workload information (e.g., the workload profile 203). For evaluating the capacity of a server configuration under the expected workload, certain embodiments of a capacity planner use a "cost" function for evaluating the amount of resources of the server configuration that are consumed under the

workload. As described in ~~co pending~~ U.S. Patent No.7,424,528 ~~Application Number 10/306,279 entitled "SYSTEM AND METHOD FOR MEASURING THE CAPACITY OF A STREAMING MEDIA SERVER"~~ and in the L. Cherkasova Paper, a set of basic benchmark measurements for a server configuration may be used to derive a cost function that defines a fraction of system resources of such server configuration that are needed to support a particular media stream depending on the stream bit rate and type of access (memory file access or disk file access), including the following costs:

A) $\cos t_{X_i}^{disk}$ - a value of cost function for a stream with disk access to a file encoded at X_i *Kb/s*. If we define the media server capacity being equal to 1, the cost function is computed as $\cos t_{X_i}^{disk} = 1/N_{X_i}^{Unique}$, where $N_{X_i}^{Unique}$ is the maximum measured server capacity in concurrent streams under the UFB of the server configuration under consideration for a file encoded at X_i Kb/s; and

B) $\cos t_{X_i}^{memory}$ - a value of cost function for a stream with memory access to a file encoded at X_i *Kb/s*. Let $N_{X_i}^{Single}$ be the maximum measured server capacity in concurrent streams under the SFB of the server configuration under consideration for a file encoded at X_i Kb/s, then the cost function is computed as $\cos t_{X_i}^{memory} = (N_{X_i}^{Unique} - 1) \Big/ (N_{X_i}^{Unique} \times (N_{X_i}^{Single} - 1))$.

Please amend ¶ [0052] of the Specification as follows:

[0052] Since the amount of system resources needed .to support a particular client request depends on the file encoding bit rate as well the access type of the corresponding request, (i.e. different requests have a different resource "cost" as described above), MediaProf 202 provides a corresponding classification of simultaneous connections in the generated workload profile 203. FIGURE 5 shows an example workload profile 203 that may be generated by MediaProf 202. As shown, the example workload profile 203 of FIGURE 5 includes various points in time for which access information was collected in the access log of workload 201, such as time T1. For each time point, the number of concurrent connections is identified. More specifically, the number of concurrent connections are categorized into corresponding encoding bit rates for the streaming media files accessed thereby. Further, the number of concurrent

connections in each encoding bit rate category is further categorized into sub-categories of either memory or disk depending on whether the access was a memory access or a disk access. That is, MediaProf 202 may model whether a request in the workload can be serviced from memory or from disk for a given server configuration (e.g., a given memory size). For instance, the memory modeling technique disclosed in ~~co-pending and commonly assigned~~ U.S. Patent No. 7,310,681 ~~Application Serial Number 10/601,956~~ titled "SYSTEM AND METHOD FOR MODELING THE MEMORY STATE OF A STREAMING MEDIA SERVER," may be used in certain embodiments. In certain implementations, MediaProf 202 may build different profiles for different memory sizes. Note that a memory access does not assume or require that the whole file resides in memory. For example, if there is a sequence of accesses to the same file issued closely to each other on a time scale, then the first access may read a file from disk, while the subsequent requests may be accessing the corresponding file prefix from memory. A technique that may be used by MediaProf 202 in determining whether an access is from memory or from disk is described further below in conjunction with FIGURE 6.

Please amend ¶ [0057] of the Specification as follows:

[0057] ~~Co-pending~~ U.S. Patent No. 7,310,681 ~~Application Serial Number 10/601,956 filed June . 23,2003 entitled "*STEM AND METHOD FOR MODELING THEMEMORY STATE OF A STREAMING MEDIA SERVER,"~~ further describes an example technique for modeling the memory state of a streaming media server, and such memory modeling technique may be employed by MediaProf 202 in certain embodiments for efficiently determining the memory state of a server configuration that is under consideration. That is, MediaProf 202 may use such memory modeling technique for modeling accesses of the workload 20 1 for a media server configuration under consideration to generate a workload profile 203, such as the example workload profile of FIGURE 5.